

**Lewatit® MonoPlus MP 600** is a strongly basic, macroporous anion exchange resin (type II) with beads of uniform size (monodisperse) based on a styrene-divinylbenzene copolymer, designed for all demineralization applications. The monodisperse beads have high chemical and osmotic stability. The extremely high monodispersity (uniformity coefficient: max. 1.1) and very low fines content of max. 0.1 % (<0.350 mm) result in particularly low pressure losses compared with standard resins. Due to its special macroporous structure **Lewatit® MonoPlus MP 600** stands for effective adsorption and desorption of naturally occurring organic substances. Due to the excellent regeneration efficiency and high operating capacity **Lewatit® MonoPlus MP 600** is generally used for waters in which silica and carbon dioxide concentrations are moderate. For higher silica feeds, a type I anion exchange resin such as **Lewatit® MonoPlus MP 800** is recommended.

**Lewatit® MonoPlus MP 600** is especially suitable for:

- » demineralization of water for industrial steam generation operated with co-current or modern counter-current systems like e.g. Lewatit® WS System, Lewatit® Liftbed System or Lewatit® Rinsebed System
- » polishing using the Lewatit® Multistep System or a conventional mixed bed arrangement in combination with **Lewatit® MonoPlus SP 112** or **Lewatit® MonoPlus SP 112 (H)**
- » working mixed bed in combination with **Lewatit® MonoPlus SP 112 (H)**

**Lewatit® MonoPlus MP 600** adds special features to the resin bed:

- » high flow rates during regeneration and loading
- » good utilization of the total capacity
- » low rinse water requirement
- » homogeneous throughput of regenerants, water and solutions, resulting in a homogeneous operating zone
- » virtually linear pressure drop gradient across the entire bed depth, allowing operation with higher bed depths
- » good separation of the components in mixed bed applications

## PRODUCT INFORMATION

### LEWATIT® MonoPlus MP 600



During the application of type II anion exchange resins in the regenerated form the strongly basic groups are gradually converted to weakly basic ones. This process is an inherent property of the functional groups and enhanced by:

- » elevated oxygen concentrations ( e.g. downstream from a degassifier )
- » the presence of iron, maganese, copper, etc.
- » regeneration temperatures  $>25^{\circ}\text{C}$
- » operating temperatures  $>30^{\circ}\text{C}$

The special properties of this product can only be fully utilized if the technology and process used correspond to the current state-of-the-art. Further advice in this matter can be obtained from Lanxess, Business Unit Ion Exchange Resins.

## General Description

|                       |                           |
|-----------------------|---------------------------|
| Ionic form as shipped | Cl <sup>-</sup>           |
| Functional group      | quaternary amine, type II |
| Matrix                | crosslinked polystyrene   |
| Structure             | macroporous               |
| Appearance            | beige, opaque             |

## Physical and Chemical Properties

|                         |                                     | metric units |                 |
|-------------------------|-------------------------------------|--------------|-----------------|
| Uniformity Coefficient* |                                     | max.         | 1.1             |
| Mean bead size*         |                                     | mm           | 0.6 (+/- 0.05 ) |
| Bulk density            | (+/- 5 %)                           | g/l          | 630             |
| Density                 |                                     | approx. g/ml | 1.10            |
| Water retention         |                                     | wt. %        | 55 - 60         |
| Total capacity*         |                                     | min. eq/l    | 1.1             |
| Volume change           | Cl <sup>-</sup> --> OH <sup>-</sup> | max. vol. %  | 12              |
| Stability               | at pH-range                         |              | 0 - 14          |
| Storability             | of the product                      | max. years   | 2               |
| Storability             | temperature range                   | °C           | -20 - +40       |

\* Specification values subjected to continuous monitoring.

## Recommended Operating Conditions\*

|                                 |                               | metric units      |        |
|---------------------------------|-------------------------------|-------------------|--------|
| Operating temperature           |                               | max. °C           | 30     |
| Operating pH-range              |                               |                   | 0 - 12 |
| Bed depth                       |                               | min. mm           | 800    |
| Specific pressure drop          | (15 °C)                       | approx. kPa*m/h*m | 1.0    |
| Pressure drop                   |                               | max. kPa          | 300    |
| Linear velocity                 | operation                     | max. m/h          | 50     |
| Linear velocity                 | backwash (20 °C)              | approx. m/h       | 10     |
| Bed expansion                   | backwash (20 °C)              | approx. % per m/h | 11.5   |
| Freeboard                       | backwash<br>(extern / intern) | vol. %            | 100    |
| Regenerant                      |                               |                   | NaOH   |
| Counter current<br>regeneration | level                         | approx. g/l       | 40     |
| WS-System                       | concentration                 | approx. wt. %     | 2 - 4  |
| Linear velocity                 | regeneration                  | approx. m/h       | 5      |
| Linear velocity                 | rinsing                       | approx. m/h       | 5      |
| Rinse water requirement         | slow / fast                   | approx. BV        | 3.5    |
| Co current regeneration         | level                         | approx. g/l       | 100    |
| Co current regeneration         | concentration                 | approx. wt. %     | 3 - 5  |
| Linear velocity                 | regeneration                  | approx. m/h       | 5      |
| Linear velocity                 | rinsing                       | approx. m/h       | 5      |
| Rinse water requirement         | slow / fast                   | approx. BV        | 7      |

\* The recommended operating conditions refer to the use of the product under normal operating conditions. It is based on tests in pilot plants and data obtained from industrial applications. However, additional data are needed to calculate the resin volumes required for ion exchange units. These data are to be found in our Technical Information Sheets.

## Additional Information & Regulations

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### Safety precautions

Strong oxidants, e.g. nitric acid, can cause violent reactions if they come into contact with ion exchange resins.

### Toxicity

The safety data sheet must be observed. It contains additional data on product description, transport, storage, handling, safety and ecology.

### Disposal

In the European Community ion exchange resins have to be disposed, according to the European waste nomenclature which can be accessed on the internet-site of the European Union.

### Storage

It is recommended to store ion exchange resins at temperatures above the freezing point of water under roof in dry conditions without exposure to direct sunlight. If resin should become frozen, it should not be mechanically handled and left to thaw out gradually at ambient temperature. It must be completely thawed before handling or use. No attempt should be made to accelerate the thawing process.

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This document contains important information and must be read in its entirety.

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